

Reading, Problem Sets, Topics

**Part 1. Oscillations, Waves, Sound, Fluid Mechanics**

| date   | Reading due  | Problem Sets due                      | MP due | topics                                     |
|--------|--------------|---------------------------------------|--------|--|
| 13-Jan |              |                                       |        | introduction, syllabus                     |
| 15-Jan | 13.1-3       |                                       |        | simple harmonic motion                     |
| 20-Jan | 13.4-5       |                                       | 1      | pendulum, etc                              |
| 22-Jan | 13.6, 14.1-2 | Ch 13 - 7, 15, 23, 31, 33, 45         |        | physical pendulum, fluid pressure, density |
| 25-Jan | 14.3-5       |                                       | 2      | bouyancy, Bernoulli's eqn, laminar flow    |
| 27-Jan | 15.1-3       | Ch 13 - 53; Ch 14 - 5, 17, 33, 37, 41 |        | mechanical waves                           |
| 29-Jan | 15.4-5       |                                       | 3      | transverse waves, energy                   |
| 1-Feb  | 15.6-8       | Ch 15 - 5, 7, 9, 17, 21, 23           |        | interference, standing waves, resonance    |
| 3-Feb  | 16.1-2       |                                       | 4      | sound waves                                |
| 5-Feb  | 16.3-4       | Ch 15 - 29, 35, 45, 47; Ch 16 - 3, 11 |        | intensity, standing sound waves            |
| 8-Feb  | 16.5-8       |                                       | 5      | resonance, beats, Doppler effect           |
| 10-Feb |              | Ch 16 - 15, 27, 31, 33, 39, 43        |        | review                                     |
| 12-Feb |              |                                       |        | Test #1                                    |

Test #1 – Fri 2/12 – Chapters 13-16

**Part 2. Thermal physics, thermodynamics**

|        |        |  |    |   |
|--------|--------|--|----|---|
| 17-Feb | 17.1-3 |  |    | temperature, thermometers                   |
| 19-Feb | 17.4-6 |  | 6  | thermal expansion, calorimetry              |
| 22-Feb | 17.7   | Ch 17 - 7, 15, 25, 29, 37, 55          |    | heat transfer                               |
| 24-Feb | 18.1-2 |  | 7  | equations of state                          |
| 26-Feb | 18.3-4 | Ch 17 - 59, 77; Ch 18 - 11, 13, 25, 29 |    | kinetic theory I, heat capacity             |
| 1-Mar  | 18.5-6 |  | 8  | kinetic theory II, phase diagrams           |
| 3-Mar  | 19.1-4 | Ch 18 - 17, 33, 35, 43, 48, 53         |    | first law of thermodynamics                 |
| 5-Mar  | 19.5-6 |  | 9  | internal energy, work, heat                 |
| 8-Mar  | 19.7-8 | Ch 19 - 7, 9, 13, 17, 21, 25           |    | ideal gases, adiabats                       |
| 10-Mar | 20.1-3 |  | 10 | heat engines, reversibility                 |
| 12-Mar | 20.4-6 | Ch 19 - 31, 35, 37; Ch 20 - 3, 5, 7    |    | refrigerators, second law of thermodynamics |
| 22-Mar | 20.7-8 |  | 11 | entropy                                     |
| 24-Mar |        | Ch 20 - 11, 17, 21, 25, 31, 43         |    | review                                      |
| 26-Mar |        |  |    | Test #2                                     |

Test #2 – Fri 3/26 – Chapters 17-20

### Part 3. Optics, Physical optics, Interference

| date   | Reading due | Problem Sets due                      | MP due | topics                            |
|--------|-------------|---------------------------------------|--------|-----------------------------------|
| 31-Mar | 33.1-2      |                                       |        | reflection, refraction            |
| 2-Apr  | 33.3-5      |                                       | 12     | TIR, dispersion, polarization     |
| 5-Apr  | 34.1-2      | Ch 33 - 5, 7, 17, 25, 47, 59          |        | spherical mirror                  |
| 7-Apr  | 34.3-4      |                                       | 13     | thin lenses                       |
| 9-Apr  | 34.5-8      | Ch 34 - 1, 7, 11, 25, 27, 31          |        | camera, eye, magnifier, telescope |
| 12-Apr | 35.1-3      |                                       | 14     | interference, two-slit            |
| 14-Apr | 35.4-5      | Ch 34 - 51, 93; Ch 35 - 3, 9, 17, 23  |        | thin films                        |
| 16-Apr | 36.1-3      |                                       | 15     | single-slit diffraction           |
| 19-Apr | 36.4-5      | Ch 35 - 27, 29, 35; Ch 36 - 9, 13, 17 |        | multiple slits, grating           |
| 21-Apr | 36.6-7      |                                       | 16     | circular slits, resolution        |
| 23-Apr |             | Ch 36 - 25, 35, 39, 47, 60, 68        |        | review                            |
| 26-Apr |             |                                       |        | Test #3                           |

Test #3 – Mon 4/26 – Chapters 33-36

Final Exam – Tue 5/4 – Comprehensive